9/5/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

6402360 INSPEC Abstract Number: A1999-24-8770J-023, B1999-12-7520E-053
Title: Shielding of flexible microelectrode interconnects for suppression of artifacts in neural prostheses
Author(s): Stieglitz, T.; Schuettler, M.; Keller, R.; Meyer, J.-U.
Author Affiliation: Dept. of Sensor Syst./Microsyst., Fraunhofer Inst. for Biomed. Eng., St. Ingbert, Germany
Conference Title: Proceedings of the 20th Annual International Conference of the IEEE Engineering in Medicine and Biology Society. Vol.20 Biomedical Engineering Towards the Year 2000 and Beyond (Cat. No.98CH36286) Part vol.5 p.2574-7 vol.5
Editor(s): Chang, H.K.; Zhang, Y.T.
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 1998 Country of Publication: USA 6 vol. xviii+xix+3384 pp.
ISBN: 0 7803 5164 9 Material Identity Number: XX-1999-00307
U.S. Copyright Clearance Center Code: 0 7803 5164 9/98/$10.00
Conference Title: Proceedings of the 20th Annual International Conference of the IEEE Engineering in Medicine and Biology Society. Vol.20 Biomedical Engineering Towards the Year 2000 and Beyond
Conference Sponsor: Biomed. Div. Hong Kong Inst. Eng.; Chinese Biomed. Eng. Soc
Conference Date: 29 Oct.-1 Nov. 1998 Conference Location: Hong Kong, China
Language: English Document Type: Conference Paper (PA)
Treatment: Practical (P); Experimental (X)
Abstract: An approach for the suppression of artifacts in interconnects of **neural prostheses** is described. Micromachining technologies have been applied to develop **flexible** multichannel electrodes with integrated interconnects. Often, electrodes were **implanted** on **nerves** with large muscles nearby. Artifacts from muscle activity could couple into the interconnect lines and disturb the small signals recorded from nerves. Therefore, we present a new generation of flexible electrodes with an electrical shielding of the interconnects. Simulations with a discrete cable model of the microdevices were performed. Additionally, a setup for in vitro measurements of interconnect properties in a physiologic environment was built up. Measurements of crosstalk between the lines and coupling of external signals were performed and compared with the simulations. Shielded interconnects as well as unshielded ones showed only small crosstalk between the lines in a physiologic saline solution. The coupling of an external potential ("artifact") into the interconnects could be reduced by 50% when the electrical shield was put to ground potential. (4 Refs)
Subfile: A B
Descriptors: biomedical electrodes; crosstalk; interconnections; metallisation; microelectrodes; micromachining; neuromuscular stimulation; prosthetics; shielding
Identifiers: neural prostheses; artifacts suppression; flexible microelectrode interconnects; electrical shielding; flexible multichannel electrodes; micromachining; muscle activity artifacts; discrete cable model ; in vitro measurements; crosstalk; external potential; three metallisation layer process; RIE; capacitive coupling
Class Codes: A8770J (Prosthetics and other practical applications); A8730C (Electrical activity in neurophysiological processes); A8730E (External and internal data communications, nerve conduction and synaptic transmission); B7520E (Prosthetics and orthotics); B2575F (Fabrication of micromechanical devices); B5230 (Electromagnetic compatibility and interference)

9/5/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

5985279 INSPEC Abstract Number: B9809-2575-060

Title: Microflex: a new technique for hybrid integration for microsystems

Author(s): Beutel, H.; Stieglitz, T.; Meyer, J.U.

Author Affiliation: Dept. of Sensor Syst., Fraunhofer Inst. for Biomed. Eng., Stankt Ingbert, Germany

Conference Title: Proceedings MEMS 98. IEEE. Eleventh Annual International Workshop on Micro Electro Mechanical Systems. An Investigation of Micro Structures, Sensors, Actuators, Machines and Systems (Cat. No.98CH36176) p.306-11

Publisher: IEEE, New York, NY, USA

Publication Date: 1998 Country of Publication: USA xxx+666 pp.

ISBN: 0 7803 4412 X Material Identity Number: XX98-00687

U.S. Copyright Clearance Center Code: 0 7803 4412 X/98/$10.00

Conference Title: Proceedings IEEE Eleventh Annual International Workshop on Micro Electro Mechanical Systems An Investigation of Micro Structures, Sensors, Actuators, Machines and Systems

Conference Sponsor: IEEE Robotics & Autom. Soc.; ASME Dynamic Syst. & Control Div.; Ministr. Econ. Affairs of Baden-Wuttemberg

Conference Date: 25-29 Jan. 1998 Conference Location: Heidelberg, Germany

Language: English Document Type: Conference Paper (PA)

Treatment: Applications (A); Practical (P); Experimental (X)

Abstract: This paper describes a new interconnection wire method which allows versatile multiple strand connections between microsensors: sensor arrays and integrated circuits (IC). The interconnection method is termed Micro Flex Interconnects (MFI). One example for this technology is the connection of **implantable** , highly **flexible** **neural** micro devices to electronics for interfacing to the external world. The interconnection technique is based on a novel multilayer process using polyimide (Du Pont PI 2611). The thickness of the polyimide structure ranges from 5 to 15 mu m including the insulation layers. Several metallization layers can be embedded in the material. This approach exhibits same advantages. The involved material is non-toxic and the ICs do not need any additional bond pad metallization. The MFI technique has been proven long-term stable. The metallization material can be chosen accordingly for electrodes, conducting lines, and connection pads. An commercial ball wedge bonder is the only equipment needed to perform the MFI method. (15 Refs)

Subfile: B

Descriptors: integrated circuit interconnections; integrated circuit metallisation; integrated circuit testing; mechanical testing; microsensors ; polymer films

Identifiers: hybrid integration; microsystems; interconnection wire; multiple strand connections; microsensors; sensor arrays; integrated circuits; Micro Flex Interconnects; neural micro devices; interconnection; multilayer proces; polyimide; Du Pont PI 2611; insulation layers; metallization layers; MFI; metallization material; conducting lines; connection pads; commercial ball wedge bonder; 5 to 15 mum

Class Codes: B2575 (Micromechanical device technology); B2550F (Metallisation and interconnection technology); B7230 (Sensing devices and transducers); B2570 (Semiconductor integrated circuits)

Numerical Indexing: size 5.0E-06 to 1.5E-05 m

9/5/3 (Item 3 from file: 2)

DIALOG(R)File 2:INSPEC

5203081 INSPEC Abstract Number: A9607-8770J-008, B9604-7520E-010, C9604-3385C-001

Title: Implantable multiprogrammable microstimulator dedicated to bladder control

Author(s): Arabi, K.; Sawan, M.

Author Affiliation: Dept. of Electr. & Comput. Eng., Ecole Polytech. de Montreal, Que., Canada

Journal: Medical & Biological Engineering & Computing vol.34, no.1 p.9-12

Publisher: Peter Peregrinus for Int. Fed. Med. & Biol. Eng,
Publication Date: Jan. 1996 Country of Publication: UK
CODEN: MBECDY ISSN: 0140-0118
SICI: 0140-0118(199601)34:1L.9:IMMD;1-C
Material Identity Number: M218-96002
U.S. Copyright Clearance Center Code: 0140-0118/96/$10.00
Language: English Document Type: Journal Paper (JP)
Treatment: Practical (P)
Abstract: An implantable multiprogrammable microstimulator that is intended to restore normal bladder functions (retention and incontinence) to spinal cord injured patients is presented. The implantable microstimulator circuitry is externally controlled and is powered by a single encoded radio frequency carrier and has 4 bipolar (8 monopolar) independently controlled channels. It offers a higher degree of reprogrammability and **flexibility** and can be used in any **neuromuscular** applications. The **implant** system is adaptable to the patient`s needs and to future developments in stimulation algorithms, without changing the implant. Features of the microstimulator include its capabilities to generate a wide range of waveforms and to combine up to 4 different programmable frequencies in each wave train. By using a forward error detection and correction communication protocol, the reliability of the implant is increased. The chip has been designed for structural testability by means of a scan-based test approach and uses circuit techniques to reduce power consumption and ensure long-term stability. (10 Refs)
Subfile: A B C
Descriptors: biocontrol; prosthetics
Identifiers: implantable multiprogrammable microstimulator; bladder control; urine retention; incontinence; spinal cord injured patients; encoded radio frequency carrier; bipolar independently controlled channels; implant system; stimulation algorithms; programmable frequencies; forward error detection; correction communication protocol; structural testability; scan-based test approach; long-term stability; power consumption reduction circuit techniques
Class Codes: A8770J (Prosthetics and other practical applications); B7520E (Prosthetics and orthotics); C3385C (Prosthetic and orthotic control systems)

9/5/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC

5124481 INSPEC Abstract Number: A9601-8770J-014, B9601-1210-012
Title: Design optimization of a current source for microstimulator applications
Author(s): St-Amand, R.; Savaria, Y.; Sawan, M.
Author Affiliation: Ecole Polytech. de Montreal, Que., Canada
Conference Title: Proceedings of the 37th Midwest Symposium on Circuits and Systems (Cat. No.94CH35731) Part vol.1 p.129-32 vol.1
Editor(s): Bayoumi, M.A.; Jenkins, W.K.
Publisher: IEEE, New York, NY, USA
Publication Date: 1994 Country of Publication: USA 2 vol. xl+1551 pp.
ISBN: 0 7803 2428 5
U.S. Copyright Clearance Center Code: 0 7803 2428 5/95/$4.00
Conference Title: Proceedings of 1994 37th Midwest Symposium on Circuits and Systems
Conference Sponsor: IEEE Circuits & Syst. Soc.; IEEE Control Syst. Soc.; IEEE Educ. Soc.; IEEE Ind. Electon. Soc.; IEEE Instrum. & Meas. Soc.; IEEE Power Electron. Soc.; IEEE Signal Process. Soc.; IEEE Syst., Maan & Cybern. Soc
Conference Date: 3-5 Aug. 1994 Conference Location: Lafayette, LA, USA
Language: English Document Type: Conference Paper (PA)
Treatment: Applications (A); Practical (P)
Abstract: The main goal of our study is the design of a current source (CS) based on a miniaturized digital-to-analog converter (DAC). The primary application of this device is a wide range of **neuromuscular implantable** microstimulators. Special attention is paid to design a **flexible** ,

compact and energy efficient circuit. A new design method is thus proposed. This method was applied to the design of a 5-bit, 3 mA peak current source, whose active circuit area is only 0.01 mm/sup 2/. This current source has been submitted for implementation in the 1.2 mu m CMOS technology offered by the Canadian Microelectronics Corporation. (6 Refs)
Subfile: A B
Descriptors: bioelectric phenomena; CMOS integrated circuits; constant current sources; digital-analogue conversion; mixed analogue-digital integrated circuits; muscle; neurophysiology; prosthetic power supplies
Identifiers: design optimization; current source; microstimulator applications; miniaturized DAC; digital-to-analog converter; neuromuscular implantable microstimulators; CMOS technology; biomedical electronics
Class Codes: A8770J (Prosthetics and other practical applications); A8730E (External and internal data communications, nerve conduction and synaptic transmission); B1210 (Power electronics, supply and supervisory circuits); B7520E (Prosthetics and orthotics); B2570D (CMOS integrated circuits); B1280 (Mixed analogue-digital circuits); B1265H (A/D and D/A convertors)

9/5/5 (Item 5 from file: 2)
DIALOG(R)File 2:INSPEC

02948559 INSPEC Abstract Number: B87052427
Title: Does your coupling coefficient matter?
Author(s): Ivall, T.
Journal: Electronics & Wireless World vol.93, no.1616 p.577-9
Publication Date: June 1987 Country of Publication: UK
CODEN: EWWOEG ISSN: 0266-3244
Language: English Document Type: Journal Paper (JP)
Treatment: Practical (P)
Abstract: Discusses how a little-known possibly hitherto unknown, fundamental property of inductively coupled oscillating circuits is being investigated by the Medical Research Council. It is being utilized to improve the operational **flexibility** of surgically **implanted nerve** stimulators. At the MRS's **Neurological Prostheses** Unit in South London these microelectronic implanted stimulators are used to activate nerve fibres which, as a result of some disease or injury, are no longer in use. They give back the patient some degree of voluntary control over limbs or organs which have become paralysed. The author presents circuits for making inductively-coupled energy less sensitive to coil separation. (6 Refs)
Subfile: B
Descriptors: biomedical electronics; coils; electromagnetic induction; oscillators; prosthetics
Identifiers: paralysis; inductively coupled oscillating circuits; operational flexibility; surgically implanted nerve stimulators; disease; injury; patient; voluntary control; limbs; organs; inductively-coupled energy
Class Codes: B1230B (Oscillators); B2140 (Inductors and transformers); B5140 (Electromagnetic induction); B7520E (Prosthetics and orthotics)

9/5/6 (Item 1 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

12051828 BIOSIS NO.: 199900332347
Flexible artificial nerve plates.
AUTHOR: Meyer Jorg-Uwe(a); Stieglitz Thomas
AUTHOR ADDRESS: (a)St. Ingbert**West Germany
JOURNAL: Official Gazette of the United States Patent and Trademark Office Patents 1221 (4):pNO PAGINATION 22-JUL-99, 1999
PATENT NUMBER: US 5897583 PATENT ASSIGNEE: Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung e.V. PATENT COUNTRY: USA
ISSN: 0098-1133
RECORD TYPE: Citation

LANGUAGE: English
MAJOR CONCEPTS: Equipment, Apparatus, Devices and Instrumentation; Neurology (Human Medicine, Medical Sciences)
METHODS & EQUIPMENT: **flexible** artificial **implantable** **nerve** plate--medical equipment, nonconductive nerve plate
MISCELLANEOUS TERMS: Patent

9/5/7 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04652187 E.I. No: EIP97033578316
Title: Adhesion of staphylococci to polymers with and without immobilized heparin in cerebrospinal fluid
Author: Nomura, Sadahiro; Lundberg, Fredrik; Stollenwerk, Maria; Nakamura, Kazuyuki; Ljungh, Asa
Corporate Source: Lund Univ, Lund, Sweden
Source: Journal of Biomedical Materials Research v 38 n 1 Spring 1997. p 35-42
Publication Year: 1997
CODEN: JBMRBG
Language: English
Document Type: JA; (Journal Article) Treatment: X; (Experimental)
Journal Announcement: 9705W2
Abstract: Infections of cerebrospinal fluid (CSF) shunts constitute a serious clinical problem. The role of adhesion by coagulase negative staphylococci, the most common etiological agent, was examined in vitro to polyvinyl chloride (PVC), silicone, and to PVC and silicone with end-point attached (EPA) heparin. These are **flexible** materials commonly used in **neurosurgical** **implants** . Bacterial adhesion was quantitated by bioluminescence. The bacterial adhesion to biomaterial surfaces increased with increasing concentrations of bacterial cells. Scatchard plot analysis showed continuous negative (concave) slopes, indicating multiple interactions between biomaterial and bacteria. The thermodynamic studies showed a positive value of the standard entropy change at 37 degree C, which indicates that hydrophobic interactions are important in bacterial adhesion to polymers. Incubation with CSF for 1 h decreased bacterial adhesion in 75% of the samples compared to incubation in buffer. Thus, the contribution of CSF proteins, like fibronectin, for the initial bacterial adhesion might be small. Heparinization of silicone and PVC decreased the numbers of adhered bacteria by 23 to 54% and 0 to 43% compared to unheparinized surfaces. Among putative inhibitors tested, suramin, chondroitin sulfate, and fucoidan inhibited adhesion to 81 plus or minus 19, 78 plus or minus 22, and 64 plus or minus 7%, respectively. These findings indicate that hydrophobic interactions play an important role, and heparinization rendering the biomaterial surface hydrophilic is therefore effective to reduce bacterial adhesion. Heparinized polymers incubated with putative inhibitors may be the optimal way to prevent shunt infections. (Author abstract) 36 Refs.
Descriptors: *Implants (surgical); Bacteria; Adhesion; Body fluids; Polyvinyl chlorides; Silicones; Polysaccharides; Biomaterials; Thermodynamics; Entropy
Identifiers: Cerebrospinal fluid; Shunt infection; Staphylococci; Etiological agent; Neurosurgical implants; Scatchard plot analysis; Hydrophobic interactions; Incubation; Fibronectin; Putative inhibitors
Classification Codes:
815.1.1 (Organic Polymers)
462.4 (Prosthetics); 801.2 (Biochemistry); 461.2 (Biological Materials); 815.1 (Polymeric Materials); 804.1 (Organic Components); 462.5 (Biomaterials)
462 (Medical Engineering & Equipment); 801 (Chemical Analysis & Physical Chemistry); 461 (Biotechnology); 815 (Plastics & Polymeric Materials); 804 (Chemical Products)
46 (BIOENGINEERING); 80 (CHEMICAL ENGINEERING); 81 (CHEMICAL PROCESS INDUSTRIES)

9/5/8 (Item 1 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online

01525319 ORDER NO: AADMM-11524
CONCEPTION D'UNE SOURCE DE COURANT SERVANT D'ETAGE DE SORTIE A UN STIMULATEUR NEUROMUSCULAIRE (FRENCH TEXT)
Author: ST-AMAND, ROBERT
Degree: M.SC.A.
Year: 1995
Corporate Source/Institution: ECOLE POLYTECHNIQUE, MONTREAL (CANADA) (1105)
Directeur: MOHAMAD SAWAN
Source: VOLUME 35/01 of MASTERS ABSTRACTS.
PAGE 279. 131 PAGES
Descriptors: ENGINEERING, BIOMEDICAL ; ENGINEERING, SANITARY AND MUNICIPAL
Descriptor Codes: 0541; 0554
ISBN: 0-612-11524-0

The main goal of our study is the design of a current-source based on a miniaturized digital-to-analog converter (DAC). The primary application of this device is a wide range of **neuromuscular implantable** microstimulators.

The circuit has to be highly **flexible** to fit a wide range of biomedical applications, energy efficient because power to the implant is extremely limited and above all, it must be very compact, because we would eventually like to use up to 32 output channels, or even more, on a single VLSI chip microstimulator implant. Moreover, since a DC level at the output is noxious for the body tissues, it is also important for us to minimize its effects.

Our approach to the problem starts by analyzing the current-source biomedical application requirements. They are defined in terms of area, power consumption, output linearity and finally, tolerable DC level. We then propose a current-source design that could possibly reach these requirements, using CMOS technology. A DC level analysis is then performed to identify and neutralize the DC level and charge accumulation that have noxious effects on body tissues. This DC level analysis led us to propose a better transistor configuration for the current-source circuit. (Abstract shortened by UMI.)

9/5/9 (Item 1 from file: 73)
DIALOG(R)File 73:EMBASE

07475592 EMBASE No: 1998410512
In vivo performance of a new biodegradable polyester urethane system used as a nerve guidance channel
Borkenhagen M.; Stoll R.C.; Neuenschwander P.; Suter U.W.; Aebischer P.
P. Aebischer, Division of Surgical Research, Centre Hospitalier Univ. Vaudois, Lausanne University Medical School, Lausanne Switzerland
AUTHOR EMAIL: paebisch@chuv.hopsvd.ch
Biomaterials (BIOMATERIALS) (United Kingdom) 1998, 19/23 (2155-2165)
CODEN: BIMAD ISSN: 0142-9612
PUBLISHER ITEM IDENTIFIER: S0142961298001227
DOCUMENT TYPE: Journal; Article
LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH
NUMBER OF REFERENCES: 19

Biodegradable nerve guidance channels (NGCs) represent a promising alternative to current clinical nerve repair procedures. To be suitable as a NGC material, the polymer system should possess elastomeric properties and degrade at a defined rate without interfering with the regenerating environment. Polymers made of non-crystallizable blocks of poly[glycolide-co-(epsilon-caprolactone)]-diol and crystallizable blocks of poly[(R)-3-hydroxybutyric acid-co-(R)-3-hydroxyvaleric acid]-diol (PHB) can be modulated so as to respond to those criteria. Tubular structures were

fabricated from three different types of materials containing either 41, 17 or 8 wt% PHB. Nerve regeneration through a 10 mm long NGC using a transected sciatic nerve model with an 8 mm gap was studied in rats at 4, 12 and 24 weeks. Out of 26 implanted NGCs, 23 contained regenerated tissue cables centrally located within the channel lumen and composed of numerous myelinated axons and Schwann cells. No significant difference in the degree of regeneration was observed between the various channel types. The inflammatory reaction associated with the polymer degradation had not interfered with the nerve regeneration process. Macrophages and giant cells surrounded polymer material remnants. A weight loss of 33, 74 and 88% for polymers containing 41, 17 and 8 wt% PHB was observed after 24 weeks by nuclear magnetic resonance (NMR) anaylsis, respectively. In all cases, the polymer fragments had a porous appearance with multiple surface cracks as evidenced by scanning electron microscopical analysis. Guidance channels made of 8 wt% PHB containing polymer displayed the highest degree of degradation at 24 weeks with only small polymer fragments remaining. The present study suggests that this new biodegradable elastomeric polymeric material holds promises for its utilization as nerve guidance channels.

DRUG DESCRIPTORS:
*polyester
urethan; polymer; biomaterial
MEDICAL DESCRIPTORS:
*nerve regeneration
biocompatibility; physical parameters; **elasticity** ; degradation; sciatic **nerve** ; **implant** ; **nerve fiber** ; schwann cell; inflammation--complication --co; macrophage; giant cell; nuclear magnetic resonance; scanning electron microscopy; surface property; nonhuman; male; rat; animal experiment; article; priority journal
CAS REGISTRY NO.: 51-79-6 (urethan)
SECTION HEADINGS:
  008 Neurology and Nerosurgery
  027 Biophysics, Bioengineering and Medical Instrumentation

9/5/10 (Item 1 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

08608482 95368355 PMID: 7640971
Evaluation of a thin-film peripheral nerve cuff electrode.
Walter J S; McLane J; Cai W; Khan T; Cogan S
Hines VA Hospital, Rehabilitation Research and Development Center, IL 60141, USA.
journal of spinal cord medicine (UNITED STATES) Jan 1995, 18 (1) p28-32, ISSN 1079-0268 Journal Code: 9504452
Contract/Grant No.: N43-NS-2-2367; NS; NINDS
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: Completed
Subfile: INDEX MEDICUS
This is a study of the reaction of large **nerves** to **implantation** using a **flexible** , thin-film cuff electrode. Cuff electrodes were implanted on the sciatic nerve of three cats. An implantation period of six weeks allowed sufficient time for any injury responses in the nerve and connective tissue sheath around the cuff to develop. The electrode came off the nerve in one of the cats. In the remaining two cats, gross observation following explantation of the electrodes revealed encapsulation of the cuffs without swelling of nerve tissue. Histological evaluation did not demonstrate nerve injury. The nerve cuff electrodes, which are comprised of titanium and iridium coatings on a fluorocarbon polymer substrate, appeared unaffected by the implantation, and connective tissue encapsulation did not adhere to either the polymer substrate or metallization. Evaluation of the electrodes using activated iridium oxide charge injection sites in more extended studies is now being undertaken.
Tags: Animal; Male; Support, U.S. Gov't, P.H.S.
Descriptors: *Electric Stimulation Therapy--instrumentation--IS; *Electrodes, Implanted; *Neuromuscular Junction--physiopathology--PP;

*Peripheral Nerves--physiopathology--PP; Cats; Connective Tissue--pathology --PA; Equipment Design; Nerve Degeneration--physiology--PH; Neuromuscular Junction--pathology--PA; Peripheral Nerves--pathology--PA; Polytetrafluoroe thylene; Sciatic Nerve--pathology--PA; Sciatic Nerve--physiopathology--PP; Surface Properties

CAS Registry No.: 9002-84-0 (Polytetrafluoroethylene)

Record Date Created: 19950921

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Set     Items   Description
S1    5457824   NEURO? OR NEURA? OR NERVOUS OR NERV?
S2    1333581   PROSTHESIS OR PROSTHESES OR IMPLANT?
S3    1368571   FLEXIBL? OR FLEXIBILIT? OR ELASTIC? OR NONRIGID? OR NON()R-
            IGID?
S4    5457205   S1 NOT NEUROPROSTHES?
S5       8360   S4(2N)S2 OR NEUROPROSTHES?
S6        121   S5(S)S3
S7         25   S5(10N)S3
S8         15   RD (unique items)
S9         10   S8 NOT (PY>2000 OR PD>20000428)
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         (c) 2002 ESPICOM Bus.Intell.
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         (c) 2002 Mass. Med. Soc.
File  48:SPORTDiscus 1962-2002/Nov
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File  71:ELSEVIER BIOBASE 1994-2002/Nov W3
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         2002 (c) Action Potential
File 162:CAB Health 1983-2002/Oct
         (c) 2002 CAB International
File 164:Allied & Complementary Medicine 1984-2002/Nov
          (c) 2002 BLHCIS
File 467:ExtraMED(tm) 2000/Dec
         (c) 2001 Informania Ltd.
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